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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/400,549	09/21/1999	HIROSHI NODA	35-C13849	3535

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
MISLEH, JUSTIN P	

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/400,549	NODA, HIROSHI	
	Examiner	Art Unit	
	Justin P. Misleh	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20 - 23, 26, and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20 - 23, 26, and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 2, 2006 has been entered.

Response to Arguments

2. Applicant's arguments filed May 2, 2006 have been fully considered but they are not persuasive.

3. Applicant argues, "Rashkovskiy et al. fails to teach or suggest calculating a correction value corresponding to a first noise component on the basis of changes in the first, second and third accumulation durations, and changes in the first, second and third noise components accumulated in the pixel, and where the first, second, and third accumulation durations are different from each other."

4. The Examiner respectfully disagrees with Applicant's position. In the Final Office Action (mailed Jan. 26, 2006), the Examiner indicated that "Figure 3 shows at least three noise frames 24 - the Examiner considers the first accumulation duration to correspond to the first noise frame 24 of the three noise frames 24." The Examiner further considered "the second noise frame 24 of the three above-stated noise frames 24 to be the correction value

corresponding to the second accumulation duration" and "the third noise frame 24 of the three above-stated noise frames 24 to be the correction value corresponding to the third accumulation duration."

Additionally, Rashkovskiy et al. disclose, "the I_{P_DARK} pixel intensity pixel intensity may be provided by a corresponding pixel of the noise frame 24 ... the noise frame 24 is received once every interval 30, the level of the I_{P_DARK} pixel intensity is also updated once every interval 30 ... the dark current noise may change over the current interval 30" (see column 3, lines 33 – 42) (emphasis added).

The Examiner submits the only way the dark current noise may change of the interval is by changing the duration of the interval. Dark current noise is an inherent feature of semiconductor used to manufacture the image sensor and accumulates with time. In other words, the only way the dark current noise may change over the interval is by changing the duration of the interval. Since, Rashkovskiy et al. admit compensating for changes in dark current noise; the Examiner submits the noise frames (24) must be of different durations from each other.

Furthermore, to take into the abrupt changes in dark current noises with each interval, Rashkovskiy et al. take an average of the dark current noise among a plurality of noise frames (see column 3, lines 45 – 62). Thus, it is clear that Rashkovskiy et al. indeed takes into account changes in the first, second and third accumulation durations, and changes in the first, second and third noise components accumulated in the pixel, and the possibility that the first, second, and third accumulation durations are different from each other when calculating noise correction value.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 20 – 23** are rejected under 35 U.S.C. 102(e) as being anticipated by Rashkovskiy et al.

7. For **Claim 20**, Rashkovskiy et al. disclose, as shown in figures 2 – 12 and as stated in columns 2 (lines 33 – 56, 66, and 67), 3 (lines 1 – 22 and 55 – 67), 4 (lines 1 – 67), and 5 lines 1 – 25), an image processing apparatus (16):

a read-out unit (18) which reads out a photoelectric conversion signal accumulated in a pixel during a first accumulation duration, wherein the photoelectric conversion signal includes a first noise component (Figure 3 shows at least three noise frames 24 – the Examiner considers the fist accumulation duration to correspond to the first noise frame 24 of the three noise frames 24);

an operation unit (28) which calculates a noise correction value corresponding to the first noise component by using a (The operation unit operates not only a correction value corresponding to the first noise frames 24 but corresponding to all three of the above-stated noise frames 24; see column 3, line 55 – column 4, line 52):

(1) a correction value (see formulas spanning columns 4 and 5) corresponding to a second noise component accumulated in the pixel during a second accumulation duration

(Since the claim language does not specific how the correction value is determined or obtained, the Examiner simply considers the second noise frame 24 of the three above-stated noise frames 24 to be the correction value corresponding to the second accumulation duration),

(2) a correction value (see formulas spanning columns 4 and 5) corresponding to a third noise component accumulated in the pixel during a third accumulation duration (Since the claim language does not specific how the correction value is determined or obtained, the Examiner simply considers the third noise frame 24 of the three above-stated noise frames 24 to be the correction value corresponding to the third accumulation duration), and

a correction unit (22) correcting the photoelectric conversion signal using the correction value corresponding to the first noise component (see formulas in columns 4, line 52 – 5, line 25).

The Examiner indicated above that "Figure 3 shows at least three noise frames 24 - the Examiner considers the first accumulation duration to correspond to the first noise frame 24 of the three noise frames 24." The Examiner further considered "the second noise frame 24 of the three above-stated noise frames 24 to be the correction value corresponding to the second accumulation duration" and "the third noise frame 24 of the three above-stated noise frames 24 to be the correction value corresponding to the third accumulation duration."

Additionally, Rashkovskiy et al. disclose, "the I_{P_DARK} pixel intensity pixel intensity may be provided by a corresponding pixel of the noise frame 24 ... the noise frame 24 is received once every interval 30, the level of the I_{P_DARK} pixel intensity is also updated once every interval

30 ... the dark current noise may change over the current interval 30" (see column 3, lines 33 – 42) (emphasis added).

The Examiner submits the only way the dark current noise may change of the interval is by changing the duration of the interval. Dark current noise is an inherent feature of semiconductor used to manufacture the image sensor and accumulates with time. In other words, the only way the dark current noise may change over the interval is by changing the duration of the interval. Since, Rashkovskiy et al. admit compensating for changes in dark current noise; the Examiner submits the noise frames (24) must be of different durations from each other.

Furthermore, to take into the abrupt changes in dark current noises with each interval, Rashkovskiy et al. take an average of the dark current noise among a plurality of noise frames (see column 3, lines 45 – 62). Thus, it is clear that Rashkovskiy et al. indeed takes into account changes in the first, second and third accumulation durations, and changes in the first, second and third noise components accumulated in the pixel, and the possibility that the first, second, and third accumulation durations are different from each other when calculating noise correction value.

8. As for **Claim 21**, Rashkovskiy et al. disclose, as shown in figure 3 and as stated in columns 3 (lines 55) – 4 (line 4), a noise frame average computed all three of the above-stated noise frames (24); thus, it must that the correction values corresponding respectively to the second and third noise components is obtained in advance, as claimed.

9. As for **Claim 22**, Rashkovskiy et al. disclose, as stated in columns 2 (line 66 and 67) – 3 (line 11), wherein the correction value corresponding to the second noise component is information on fixed pattern noise of a plurality of the pixels.

10. For **Claim 23**, Rashkovskiy et al. disclose, as shown in figures 2 – 12 and as stated in columns 2 (lines 33 – 56, 66, and 67), 3 (lines 1 – 22 and 55 – 67), 4 (lines 1 – 67), and 5 lines 1 – 25), an image processing apparatus (16):

a read-out unit (18) reading out a photoelectric conversion signal accumulated in a pixel for a first accumulation duration, the photoelectric conversion signal including a first noise component (Figure 3 shows at least three noise frames 24 – the Examiner considers the fist accumulation duration to correspond to the first noise frame 24 of the three noise frames 24);

an operation unit (28) operating correction value corresponding to the first noise component on the basis of (The operation unit operates not only a correction value corresponding to the first noise frames 24 but corresponding to all three of the above-stated noise frames 24; see column 3, line 55 – column 4, line 52):

(1) a correction value (see formulas spanning columns 4 and 5) corresponding to fixed pattern noise of a plurality of pixels (Since the claim language does not specific how the correction value is determined or obtained, the Examiner simply considers the all of the three above-stated noise frames 24 to be the correction value corresponding to the fixed pattern noise; see columns 2, line 66 and 67 – 3, line 11),

(2) a correction value (see formulas spanning columns 4 and 5) corresponding to a second noise component accumulated in the pixel for a second accumulation duration (Since the claim language does not specific how the correction value is determined or obtained, the Examiner simply considers the second noise frame 24 of the three above-stated noise frames 24 to be the correction value corresponding to the second accumulation duration), and

a correction unit (22) correcting the photoelectric conversion signal using the correction value corresponding to the first noise component (see formulas in columns 4, line 52 – 5, line 25).

The Examiner indicated above that "Figure 3 shows at least three noise frames 24 - the Examiner considers the first accumulation duration to correspond to the first noise frame 24 of the three noise frames 24." The Examiner further considered "the second noise frame 24 of the three above-stated noise frames 24 to be the correction value corresponding to the second accumulation duration" and "the third noise frame 24 of the three above-stated noise frames 24 to be the correction value corresponding to the third accumulation duration."

Additionally, Rashkovskiy et al. disclose, "the I_{P_DARK} pixel intensity pixel intensity may be provided by a corresponding pixel of the noise frame 24 … the noise frame 24 is received once every interval 30, the level of the I_{P_DARK} pixel intensity is also updated once every interval 30 … the dark current noise may change over the current interval 30" (see column 3, lines 33 – 42) (emphasis added).

The Examiner submits the only way the dark current noise may change of the interval is by changing the duration of the interval. Dark current noise is an inherent feature of semiconductor used to manufacture the image sensor and accumulates with time. In other words, the only way the dark current noise may change over the interval is by changing the duration of the interval. Since, Rashkovskiy et al. admit compensating for changes in dark current noise; the Examiner submits the noise frames (24) must be of different durations from each other.

Furthermore, to take into the abrupt changes in dark current noises with each interval, Rashkovskiy et al. take an average of the dark current noise among a plurality of noise frames

(see column 3, lines 45 – 62). Thus, it is clear that Rashkovskiy et al. indeed takes into account changes in the first, second and third accumulation durations, and changes in the first, second and third noise components accumulated in the pixel, and the possibility that the first, second, and third accumulation durations are different from each other when calculating noise correction value.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. **Claims 26 and 27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rashkovskiy et al.

13. As for **Claims 26 and 27**, Rashkovskiy et al. disclose, as shown in figures 2 – 12 and as stated in columns 2 (lines 33 – 56, 66, and 67), 3 (lines 1 – 22 and 55 – 67), 4 (lines 1 – 67), and 5 lines 1 – 25), a focus adjustment unit performing the focus adjustment operation on the basis of the photoelectric conversion signals (see figures 14 and 15 and columns 5 (lines 37 – 60).

Regarding the memory limitation, Rashkovskiy et al. disclose, as shown in figures 14 and 15 and as stated in columns 5 (lines 37 – 68) and 6 (lines 1 – 7), a digital camera incorporating the image processing apparatus, wherein the image processing apparatus is comprised of mainly a computer (14) and microprocessor (80). Rashkovskiy et al. specifically indicates that the memory (88) is a critical component of both the computer (14) and

microprocessor (80) especially for the purposes of bus communication. Furthermore, Rashkovskiy et al. disclose, as shown in figure 3 and as stated in columns 3 (lines 55) – 4 (line 4), a noise frame average computed all three of the above-stated noise frames (24); thus, it must that the correction values corresponding respectively to the second and third noise components is obtained in advance, as claimed. The formulas spanning columns 4 and 5 of Rashkovskiy et al. would be impossible to compute without the assistance of the memory (88). So, albeit it is not specifically stated, it is inherent to Rashkovskiy et al. to stores the correction values in the memory (88).

Moreover, Rashkovskiy et al. disclose, as shown in figures 14 and 15 and as stated in columns 5 (lines 37 – 68) and 6 (lines 1 – 7), a typical digital camera including the necessary components for capturing a focused image; however, Rashkovskiy et al. does not specifically address a control unit effecting control so that a focus adjustment operation is started in response to a first operation of an operation button and a photographing operation is performed in response to a second operation of the operation button on the basis of conditions adjusted based on the focus adjustment operation.

However, **Official Notice** (MPEP § 2144.03) is taken that both the concepts and advantages of providing the above-stated focus adjustment and photographing features in a digital camera are well known and expected in the art. At the time the invention was made, it would have been obvious to one with ordinary skill in the art to provide the above-stated focus adjustment and photographing features in the Rashkovskiy et al. digital camera for the advantage of allowing a user/photographer maximum flexibility in capturing an ideal image. In other

words, providing such a feature would provide a user/photographer with the ability compose an image to his/her personal taste.

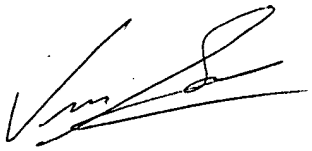
Conclusion

14. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 571.272.7313. The Examiner can normally be reached on Monday through Friday from 8:00 AM to 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Vivek Srivastava can be reached on 571.272.7304. The fax phone number for the organization where this application or proceeding is assigned is 571.273.3000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM
July 20, 2006



VIVEK SRIVASTAVA
PRIMARY EXAMINER